Inspector Technical Training: Plumbing

Topics

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II. Supply/Discharge Lines
III. Piping
IV. Water Heater
V. Fixtures
    a. Sinks
    b. Toilets
    c. Tubs
I. Questions

BASICS

Plumbing

- **Plumbing** is the system of pipes, drains, fittings, valves, and fixtures installed for the distribution of potable water for drinking, heating and washing, and waterborne waste removal.

- **Plumbing System** is typically composed of:
  - Potable water supply lines
  - Wastewater lines
  - Wastewater vent lines

Potable Water

- The dwelling unit must be served by an approvable public or private water supply that is sanitary and free from contamination.
- Residential units can be served by a public municipal system or a private system.
- For units that have private water supply (i.e., well), the state or local jurisdiction may regulate the water supply. (Follow local PHA guidelines).

Wastewater

- The dwelling unit must be connected to an approvable public or private sewer system.

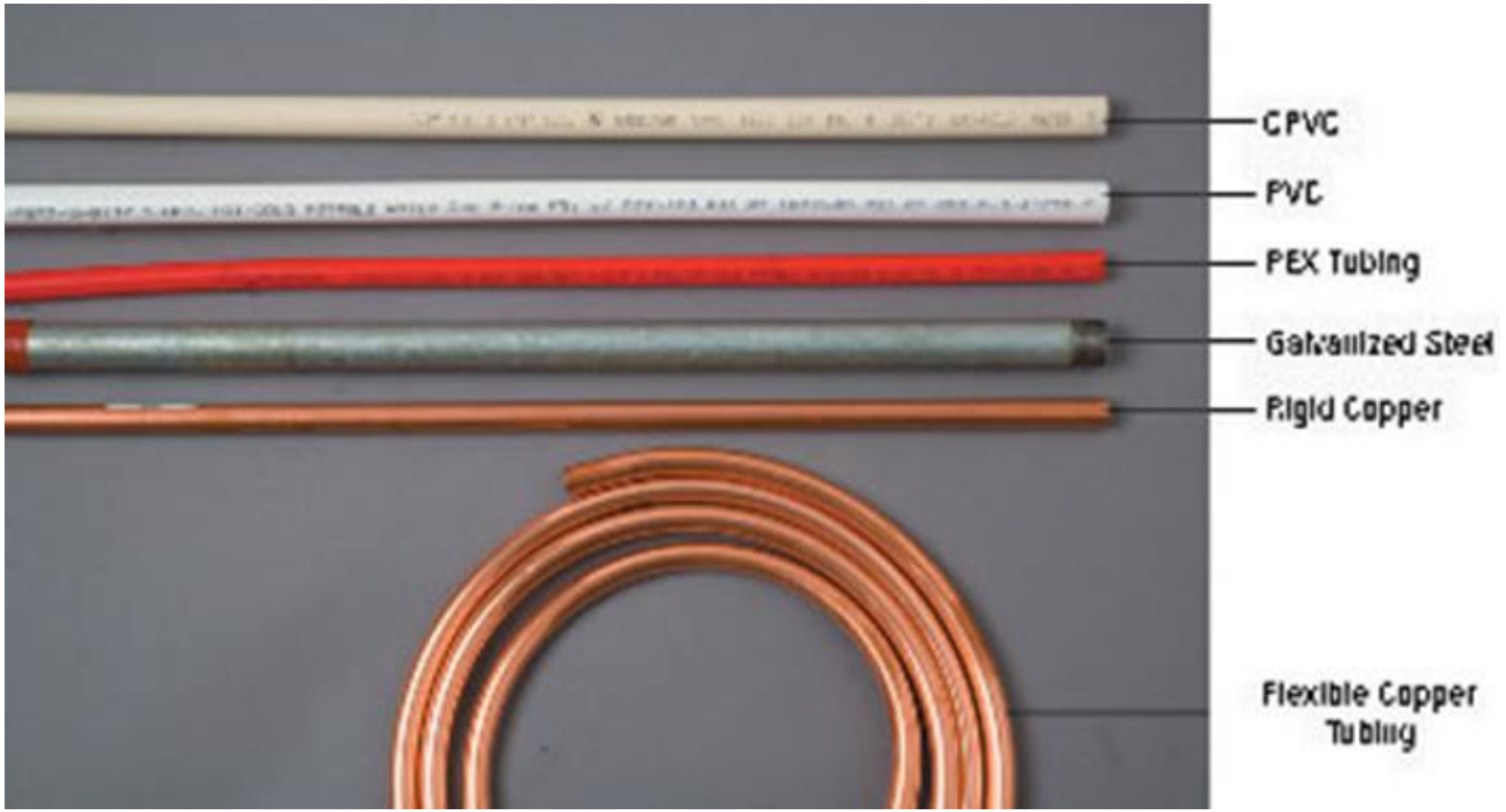
- In dwelling units that have private sewer system (i.e. a septic tank), the local jurisdiction may regulate the system. (Follow local PHA guidelines).

Septic Tank


How They Work:
SEPTIC TANKS & LEACH FIELDS
Sewer Gas Vent
After the flush
Leach Field
Septic Tank
Household wastewater (sewage) flows into a two-chambered Septic Tank. In there, solid waste falls and collects at the bottom for later pump-outs. The wastewater then continues to a Leach Field of perforated pipes for natural absorption into the soil.

Piping

Types of Piping



Piping: CPVC

Potable Water - CPVC

Fire Systems - CPVC

Piping: PVC and ABS

Wastewater - PVC

Wastewater - ABS

Piping: Brass and Copper

Brass

Copper

Piping: PEX

*special equipment required

Water - PEX* (polyethylene)

Piping – Cast Iron and Galvanized Steel

Waste Water Drain Line and Vent - Cast Iron

Old Potable Water Supply Lines - Galvanized Pipe

Water Heaters

Water Heaters and TPRV Lines

Water Heater Pressure Relief Valves

- Boiling Liquid Expanding Vapor Explosion (BLEVE) is caused by the rupture of a vessel containing a pressurized liquid above its boiling point.
- Water Heaters can experience BLEVE.
- The water heater's Temperature Pressure Relief Valve (TPRV) prevents BLEVE.
- The TPRVs need to be inspected for proper operation, including a discharge line.
- TPRV discharge lines also prevent scalding in the event of discharge.

Water Heaters and BLEVE

- BLEVE can be caused by fires, damage to the tanks and failure of heating elements or thermostats.

- BLEVE can also be caused by internal damage due to corrosion or scale build-up within the tank that blocks or seizes the TPRV.

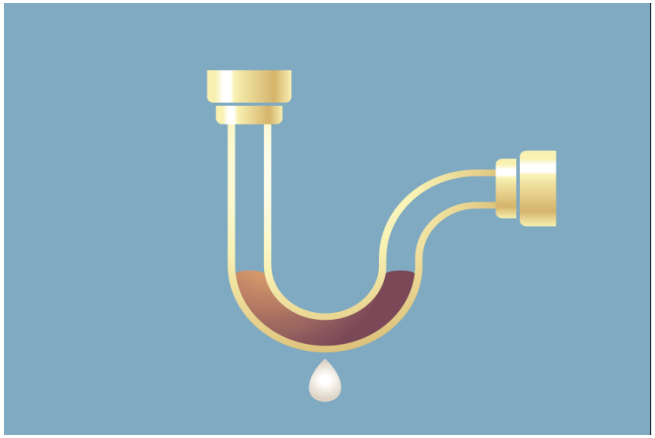
Fixtures

Sink Inspection

- Is there hot & cold water?
- Is a P-trap present?
- Is there a leak? If so, is mold, mildew, and/or organic growth present as a result?
- Is the garbage disposal electrical connection safe?

Sink Traps

- Traps retain a small amount of liquid each time the fixture is used.
- This retained liquid, called a *trap* seal, prevents sewer gas from escaping into the air.
- Sewer gas is a health hazard and can be:
  - Methane
  - Hydrogen Sulfide
  - Nitrogen
  - Carbon Monoxide



Clogged or Leaking Tub

Clogged Sink?

Toilet Issues
Clogged/Leaking

Leaks and Ceiling Damage

This tub is located above the ceiling damage.

Leaks and Ceiling Damage

Leaks and Ceiling Damage

This tub is located above the ceiling damage.

Cross-Connections

Actual or potential *connections* between a potable water supply and a non-potable source, where it is possible for a contaminant to enter the potable water supply. Also referred to as backflow or anti-siphon.

water.epa.gov

Cross-Connections

- A **cross connection** is a potential **connection** between a potable water system and a source of contamination, such as waste water, where backflow can occur from the source of contamination and cause a serious public health hazard.
- A **backflow prevention** device is used to protect potable water supplies from contamination or pollution due to **backflow**. In water supply systems, water is normally maintained at a significant pressure to enable water to flow from the tap, shower etc.

Questions?

Thank you for your participation!